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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/583,044

06/15/2006

Osamu Funahashi

MAT-8859US

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RATNERPRESTIA

P.O. BOX 980

VALLEY FORGE, PA 19482

EXAMINER

ROBINSON, RYAN C

ART UNIT

PAPER NUMBER

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/583,044	Applicant(s) FUNAHASHI ET AL.	
	Examiner RYAN C. ROBINSON	Art Unit 4142	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/15/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claim 1 is pending in the current application.
2. The examiner acknowledges the preliminary amendments filed on 6/15/2006.
3. This application is a national stage entry of PCT application number PCT/JP2005/021229, filed on 11/18/2005.
4. The specification has been amended on 6/15/2006.
5. The drawings have been amended on 6/15/2006.

Drawings

6. The drawings filed on 6/15/2006 are accepted for examination purposes.

Priority

7. This application claims priority from Japanese Patent application number 2004-361168, filed on 12/14/2004.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. **Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Funahashi et al., U.S. Publication No. 2003/0185415, published on 10/2/2003 (hereby Funahashi), in view of Onuma et al., U.S. Publication No. 2005/0111690, filed on 11/16/2004 (hereby Onuma).**

10. As to claim 1, Funahashi discloses a *"loudspeaker"* (Fig. 4), comprising a *"frame"* (Fig. 4, element 19), a *"magnetic circuit held by the frame"* (Fig. 4, element 9). There is a *"voice coil body"* (Fig. 4, element 15), *"disposed so it can move freely in the magnetic gap of the magnetic circuit"* (Fig. 4, element 14). There is a *"diaphragm whose outer circumferential end"* (Fig. 4, element 17) *"is connected to the frame"* (Fig. 4, element 9) *"via a first edge"* (Fig 4, element 18), and a *"suspension holder"* (Fig. 1, element 22), *"whose outer circumferential end is connected to the frame"*.

It is noted however that Funahashi does not teach that the *"voice coil body is provided at the outer wall surface with a supporting section which is protruding outward, and a diameter of inner circumference of the suspension holder is*

greater than an outer diameter of the voice coil body while a diameter of the inner circumference of diaphragm is greater than a diameter of the inner circumference of suspension holder for facilitating a gluing of the inner circumferential end of suspension holder and the inner circumferential end of diaphragm on the supporting section and to the voice coil body", although Funahashi does suggest that the suspension holder (Fig. 1, element 22), and diaphragm (Fig. 4, element 17), can be attached to the voice coil body (Fig. 4, element 15), with adhesive (Page 4, Para. 5-8).

On the other hand, Onuma discloses that the voice coil body *"is provided at the outer wall surface with a supporting section which is protruding outward"* (Fig. 2, element 12), and a *"diameter of inner circumference"* of the suspension holder (Fig. 2, element 9) *"is greater than an outer diameter"* of the voice coil body (Fig. 2, element 11), *"for facilitating a gluing"* (Fig. 2, element 19) of the *"inner circumferential end of suspension holder"* and the *"inner circumferential end of diaphragm"* (Fig. 2, element 10) on *"the supporting section"* (Fig. 2, element 12) and *"to the voice coil body"* (Fig. 2, element 11).

It would have been obvious to one skilled in the art at the time of applicant's invention to incorporate the supporting section as taught by Onuma (Onuma: Fig. 2, element 12) on the voice coil body in the loudspeaker of Funahashi (Funahashi: Fig. 4, element 5), because both Funahashi and Onuma are from the loudspeaker field. More specifically, Funahashi is directed to a loudspeaker with a diaphragm and supporting member both connected to the frame by edges (Funahashi: Abstract), while Onuma is directed to a loudspeaker

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with a diaphragm and suspension connected to the voice coil via a connecting member (Onuma: Abstract). Both Funahashi and Onuma are from the loudspeaker field.

It would have been obvious to one skilled in the art at the time of applicant's invention to incorporate the supporting section as taught by Onuma on the voice coil body in the loudspeaker of Funahashi, because that would have allowed users of Funahashi's loudspeaker to obtain a strong connection between the supporting section, the diaphragm, and the voice coil connection member (Onuma: Page 1, Para. 0005, lines 2-4).

It would have been obvious to one skilled in the art at the time of applicant's invention to incorporate the supporting section as taught by Onuma on the voice coil body in the loudspeaker of Funahashi. Using the known technique used in loudspeaker construction, particularly, a connecting member on the voice coil body for establishing a resilient connection with the diaphragm and supporting member, thereby extending the lifetime of the loudspeaker, would have been obvious to one of ordinary skill.

11. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Onuma et al., U.S. Publication No. 2005/0111690, filed on 11/16/2004 (hereby Onuma), in view of Sugiura, U.S. Patent No. 7,010,141, filed 10/21/2003 (hereby Sugiura)

12. As to claim 1, Onuma discloses a *"loudspeaker"* (Fig. 1) comprising a *"frame"* (Fig. 1, element 1), a *"magnetic circuit held by the frame"* (Fig. 1, elements 3, 4, 5), a *"voice coil body"* (Fig. 1, element 11), *"disposed so as it can move freely in a magnetic gap of the magnetic circuit"* (Page 2, Para. 0024, lines 1-4), a *"diaphragm whose outer circumferential end"* (Fig. 1, element 10), is *"connected to the frame via a first edge"* (Fig. 1, element 13), and a *"suspension holder"* (Fig. 1, element 9), *"whose outer circumferential end is connected to the frame"* (Fig. 1, element 1), *"wherein the voice coil body is provided at the outer wall surface with a supporting section which is protruding outward"* (Fig. 2, element 12), and a *"diameter of inner circumference of the suspension holder"* (Fig. 2 element 9), is *"greater than an outer diameter of the voice coil body"* (Fig. 2, element 11), *"while a diameter of the inner circumference of diaphragm"* (Fig. 2 element 10), is *"greater than a diameter of the inner circumference of suspension holder"* (Fig. 2, element 9), for *"facilitating a gluing"* (Fig. 2, element 19), of the *"inner circumferential end of suspension holder"* (Fig. 2, element 9) and the *"inner circumferential end of diaphragm"* (Fig. 2, element 10) on the *"supporting section"* (Fig. 2, element 12), and to the *"voice coil body"* (Fig. 2, element 11).

It is noted, however, that Onuma does not teach that the suspension holder is connected to the frame, “*via a second edge*”.

On the other hand Sugiura teaches that the suspension holder (Fig. 5, element 27) is connected to the frame (Fig. 5, element 20), “*via a second edge*” (Fig. 5, element 30).

It would have been obvious to one skilled in the art at the time of applicant’s invention to incorporate a suspension edge as taught by Sugiura (Sugiura: Fig. 5, element 30) to attach the suspension holder to the frame, in the loudspeaker of Funahashi (Funahashi: Fig. 1, element 9), because both Funahashi and Sugiura are from the loudspeaker field. More specifically, Funahashi is directed to a loudspeaker with a diaphragm and supporting member both connected to the frame by edges (Funahashi: Abstract), while Sugiura is directed to a loudspeaker with a suspension connected to the frame with a connecting edge (Sugiura: Abstract). Both Funahashi and Sugiura are from the loudspeaker field.

It would have been obvious to one skilled in the art at the time of applicant’s invention to incorporate a suspension edge as taught by Sugiura to attach the suspension holder to the frame, in the loudspeaker of Funahashi, because that would have prevented the resonance from the suspension and frame from being transmitted to the voice coil, thus improving sound quality (Sugiura: Col. 1, lines 58-60).

It would have been obvious to one skilled in the art at the time of applicant’s invention to incorporate a suspension edge as taught by Sugiura to

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attach the suspension holder to the frame, in the loudspeaker of Funahashi.

Using the known technique used in loudspeaker construction, particularly a suspension edge to connect the suspension to the frame, in order to improve the sound quality of the speaker, would have been obvious to one of ordinary skill.

Conclusion

The prior art made of record

- a. US Patent Number 2003/0185415 (Speaker)
- b. US Publication Number 2005/0111690 (Speaker
Apparatus)
- c. US Patent Number 7,010,141 (Speaker Device)

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan C. Robinson whose telephone number is (571) 270-3956. The examiner can normally be reached on Monday through Friday from 9 am to 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Srirama Channavajjala, can be reached on (571) 272-4108. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ryan Robinson

/Srirama Channavajjala/

Supervisory Patent Examiner, Art Unit 4142